Implementation Issues of a Critical Care Computer-based Patient Record: A Formative Evaluation

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abstract

Introduction

A comprehensive evaluation plan was constructed for the development and implementation of a bedside critical care computer-based patient record (CPR). This plan contained both formative and summative evaluation components as well as quantitative and qualitative evaluation designs. This paper reports the results from the qualitative formative evaluation. Friedman and Wyatt[1] and Anderson, Aydin and Jay[2] recommend this design for use when the design of the system is being conducted and the needs of the users are being identified and understood. A database describing the issues was maintained by the functional analyst. These were issues to be resolved during system implementation in a medical intensive care unit. This database functioned as the documentation for communication between the implementation team, the evaluation team, and the vendor.

A relational database program was used to develop the database. Elements of the database are: issue ID, start date, close date, brief description, issues description, priority, status, target date, application area, functional analyst, technical analyst, current responsibility, testing phase, tracking number, vendor analyst, phone number, and comments. One hundred and forty-one issues were identified in a three month time frame.

Methods

The issues database was printed in report format and analyzed for themes using constant comparative techniques. Theoretic coding of each of the issues was made by the primary investigator. The remaining investigators then categorized the 141 issues into the eleven categories identified by the first investigator. Six new categories were identified. The criteria of trustworthiness[3] were maintained through peer debriefing, memos concerning decisions about categories, and credibility/dependability audits. The 17 categories were then collapsed into four major themes that described the issues concerning implementing a critical care CPR.

Results

The four themes identified were integration into the clinical enterprise, harmonization of the human-computer interface, clarification of intended system functionality, and representation of data and information for decision making. Integration into the clinical enterprise is comprised of the issues around risk management, error handling, medical records management, establishment of audit trails, and the adaptation of clinical policies and procedures to handle automated data entry. Training of staff, decreasing staff documentation burden, and staff acceptance of the new innovation are categories that are included in the theme of harmonization of the human-computer interface. The third theme of clarification of intended system functionality includes issues about customization of the vendor's product, hardware/technical problems, interface operations, and understanding the documentation of the functionality purchased from the vendor. The last theme of data and information representation addresses the issues of the way clinical assessments were documented, charting formats, database designs, various enhancements, decision support options, screen designs, and research use.

Summary

The findings of this study create a typology for the ongoing evaluation of the CPR. Furthermore, a major purpose of the adoption of a CPR was to enhance clinical decision making through the representation of data and information. It is affirming to find that the staff and analysts were identifying and solving major implementation issues concerning data and information representation.

References

[1]Friedman CP, Wyatt JC. Evaluation methods in medical informatics. New York: Springer-Verlag, 1997.

[2]Anderson JG, Aydin CE, Jay SJ. Evaluating health care information systems: Methods and applications. Thousand Oaks, CA: Sage, 1994.

[3]Lincoln Y, Guba E. Naturalistic inquiry. Beverly Hills, CA: Sage, 1985.

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